Charles Batchelor Notebook, Cat. 1311

This notebook covers the period 1882-1883. Most of the entries are by Charles Batchelor. The book contains technical information and prices relating to Edison electric lighting equipment. Several printed tables have been pasted into the notebook. The book contains 54 pages, numbered by an archivist.

Blank pages not filmed: 19-20, 41-44.

CHARLES BATCHELOR,

E 5

Machines Dynamos (Système Edison)

Série	Nombre de Lampes de 16 Bougies	Dimensions de la base.	Hauteur totale	Poids. Armature et Poulie	Bâtis	Noyaux et Inducteurs	Total	Poulie Largeur	Diamètre	Nombre de Tours	Résistance pour Armature	Résistance pour Electros	Force cheval	Prix de vente.
E.	15.	435 x 630.	830.	26.	200.	64.	290.	762.	127.	2200.	0,75.	90.	3.	1500.
L.	60.	1140 x 730.	1950.	125.	858.	247.	1230.	1524.	254.	1200.	0,18.	75.	10.	4250.
L.	150.	1600 x 735.	1970.	250.	1506.	644.	2400.	2286.	355.	900.	0,07.	40.	20.	7250.
K.	250.	1830 x 735.	2020.	340.	2258.	702.	3300.	2286.	355.	900.	0,032.	35.	35.	10250.
C.	1200.	4266 x 2654.	2438.							350.	0,0012.	35.	150.	85000.

Société Electrique Edison 16 Rue Michel-Ange Paris

Price list of Electric Light tubes

In New York June 1st 1882.

No of Size	Cost per foot	per mile	Circular Mills per foot in each conductor	Sq. Millimeters	Weight per foot	per mile
1	$4.05	$ 69.10	1.639890	830.	10.24 lbs.	
1½	3.10	52.90	1.296419	595.	7.95.	
2	2.35	38.40	862.996	4444.	5.85.	
2½	1.85	31.50	671562	340	4.12.	
2¾	1.50	25.60	494541	244	3.17.	
3	.80	13.65	262951	133.	1.60.	
4	.60	10.25	132 816	92.	1.10.	
5	.45	7.70	107 289	54.	0.66.	
6	.35	6.00	66581	33	0.42.	
7	.27	4.60	33015	16	0.21.	

ELECTRIC TUBE Co. Price.

Diameter inches	Wire No.	Copper Weight per Mile	Copper Price	Cost of Tubing per Foot	
3/8	22			$1.10	
3	16			17.6	
3 3/4	10			12.6	
2 1/2	05			10.0	
2 1/4	08			8.6	
2	01			4.9	
1.9	44			3.3	
1.35	33			2.9	
1.35	33			2.2	
1.	27			1.10	

Insulating Compound	10¢ lb.
" Tapes.	40¢ "

Tapes covered copper or cables

1 Strand or single wire covered with 2 layers of tape.	50¢ lb.
2 " " wires together " " 2 " "	45 "
2 wires covered with 1 layer each separate & the two together after with 2 layers.	83½ lb.
3 wires together 2 layers of tape.	45 "
4 " " " " "	43 "
4 " " 3 " "	48 "
5 " " " " "	46 "

Feeder covering box

For	1. 1½. 2. 2½ & 2¾.		$2.90
"	3		1.92.
Joints # 1½	$2.70	Joints # 2¾	1.37
" # 2	2.25	" # 3	.75
" # 2½	1.91		

Service box	$ 2.15	Joints	$ 1.10
Cross box	4.32	"	2.04
Tee box	3.31	"	1.65
Elbow box	for # 2½ .2, 1½ & 1.		2.80
" "	# 4 .3. 2¾		2.38

Joints # 1½.	$3.27	The price for the boxes includes cover both plunge card board pieces that belong inside. — Without these the prices will be from 30 to 40¢ per box less.
# 2	2.50	
# 2½	2.04	
# 2¾	1.32.	

Elbow house box.				House coupling box	
#3 box. 0.85.	Joints $1.35		#3 box 0.90	Joints 0.26	
#4 " .85	" 1.25		#4 " .90	" .62	
#5 " .75	" .55		#5 " .80	" .45	
#6 " .75	" .55		#6 " .80	" .42	
#7 " .70	" .50		#7 " .75	" .28	
			#2¾ " 1.50	" 1.03.	

House Tee Box, box any size from 1 to 3 — $2.00

" " " Joints " " 1 to 3 — 1.50

Height + Diameter of Stack for Babcock Millers Boilers.

Actual H.P.	Diam.	Height.	Actual H.P.	Diameter Diam.	Height
45	24"	60 ft	120	34 "	80 ft.
56	26"	60	136	34 "	80
62	26"	60	146	36 "	80
73	28"	65	208	38 "	100
82	30"	70	240	42 "	100
92	30"	70	292	44 "	100
104	32"	80	416	48 "	125
			480	54 "	125

Edison Dynamos Machines

June 29 1882

Letter	No of Lamps	Rev.	Watts	Amp.	Volt	Hand	Exciter	Diam. & Width	Pulley	Diam. Pulley	Price
E	16	2200		2·1	1·54	2·2½	2½ X 3	·56	7000		$185
Z	60	1200	12½ Kilo	111·3	·99	1829	10 X 6½	14 23·00	3000		$350
I	125	900		1524	990	·1982	14 X 9	2·00 ·869			
K	250	900	22½ Kilo	1774	990	·1982	14 X 9	2·00 ·9325	13·8	7000	$1350
R	500										
C	1200	350									$10,500
I	150	900	225 Kilo	1524	990		14 X 9				$900

Rectifier Dynamo.

Magnet	88.	40	19	12·18						
Armature	30	14	10	·1325						
	E	Z	I	K	R	C				

Edison Lamps. June 1882.

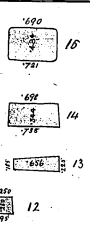
Candle Power	Res.	Volts	Watts Amperes	Watts Points	Size	Mount	Price
8	70	56	80		3		
10	250		50		5"	65/1000	9¼/1000
16	140	103	80		6"		
32			160		6"	65/1000	87/1000

Edison Light House Mica

No.	Area Circ Mils.	Area Sq. Ins.	Diam Sq. Ins.	Revs. 1000 M	Length Inches per Rev.	Gauge Decimal	Diam 1000		
10	17956	9.098	3.40			18			
12	11881	6.02	2.78			16			
14	6889	3.5	2.40			14			
16	4225	2.14	1.65			11			
18	2401	1.216	1.24			7			
20	1225	0.620	0.88			4			
23	625	0.316	0.63						

"Boris"

1000 M Rev.	1000 ft Weight			



16

14

13

12

Gas.

Taking Gas at Paris as Standard
30ᵗʰ per cubic metre.–

Daily Consumption	Total Annual Lighting	Annual expense for daily Consumption of 50 Litres	105	190	140	180
	for					
1	298.0	4.47	9.39	10.73	12.52	15.09
8	620.47	9.31	19.55	22.33	26.07	33.52
9	972.81	14.59	31.63	35.01	40.84	52.52
10	1397.21	20.06	42.53	48.14	56.17	72.22
1 Hour Extra	365.0	5.49	11.50	13.14	15.33	19.71

For gas at 23ᵈ per cu. M. deduct 6ᵈ

Compound for tubes:
66.6% Asphalt Trinidad
8.4% Linseed Oil
15.% Resine
10.% Parafin
The must never be allowed to rise above 320 Fahr. or 145 Cent.

Time Extinguished	Monthly hours of lighting when lit according to need. Hours in Jan	Feb	Mar	Apl	May	June	July	Aug	Sep	Oct	Nov	Dec.
8	100	69	52	27	7	0	0	18	48	82	103	114
9	131	97	83	57	37	22	26	49	78	113	133	153
10	162	115	124	87	68	52	37	80	108	144	163	176

Bath for wire in Columns
6 Kilos resin
2.4 Parafin

Safety cable Leads.

For 3 lamps Area of 50 centimes de Mille.

" 5 " " 75 " " "

" 9 " " 105 " " "

" 12 " " 140 " " "

" 30 " " 260 " " "

Miles per Lb.	Knots per Lb.	Feet per Ohm.	Yards per Ohm.	1000ft. per Ohm.	Miles per Ohm.
0000000333	0000 2211	189000·5	63000·0	189·0005	3·7815
0·0034239	0·0003047	17497·15	5832·3833	17·497·5	3·31705
0·0041333	0·0003683	13988·918	4662·98	13·9889·4	2·6513
0·0054124	0·0004818	11198·177	3732·7233	11·19811	2·12080
0·0060819	0·0005382	8718·30	2906·10	8·71830	1·6512
0·0077573	0·0007388	7813·50	2604·50	7·81350	1·47973
0·0088327	0·0010865	6198·14	2066·0133	6·19814	1·17371
0·0110457	0·0009813	5457·107	1819·0357	5·457107	1·03023
0·0012927	0·0011213	4888·51	1562·8391	4·88851	·887077
0·0016183	0·0013170	3991·01	1330·0366	3·99101	·760045
0·0018311	0·0016751	3138·59	1046·1961	3·13859	·59443
0·022581	0·0019035	2657·20	879·0065	2·65720	·450488

Siemens Electrical Light Cable Makers.

B.W.G. No.	Diameter. Inch.	Diameter. Millimètres.	AREA. Circular Mils.	AREA. Square Inches. =d² × .7854.	AREA. Square Millimètres.	WEIGHT AND LENGTH. Pounds per Foot.	Pounds per Yard.	Pounds per 1000ft.	Pounds per Mile. 1760yds.	Pounds per Knot. 2025yds.	Feet per Lb.	Yards per Lb.	1000ft. per Lb.	Miles per Lb.	Knots per Lb.
0000	.454	11.5316	266816	.161883	104.435	.4629241	1.877772	4.254924	2291.592	2797.82	2.160657	.7201525	.2160657	.0004093	.0003331
000	.425	10.795	180625	.141892	91.52	.354076	1.64038	3.46078	1826.80	2229.71	2.824295	.9414318	.2824295	.0005350	.0004353
00	.380	9.6516	144400	.113411	73.165	.282965	1.311315	2.767225	1460.91	1782.99	3.533410	1.177803	.3533410	.0006693	.0005446
0	.34	8.6338	115600	.0907922	58.573	.226204	1.048181	2.212021	1167.82	1425.22	4.420886	1.473628	.4420886	.0008373	.0006813
1	.300	7.620	90000	.070686	45.6024	.179233	.830733	1.752632	925.344	1129.16	5.578650	1.859550	.5578650	.0010566	.0008599
2	.284	7.2134	80656	.0633472	40.867	.159965	.741300	1.563900	825.739	1007.80	6.251600	2.083867	.6251600	.0011840	.0009635
3	.259	6.5786	67081	.0526898	33.980	.132999	.616450	1.300447	686.596	838.05	7.518000	2.506000	.7518000	.0014245	.0011592
4	.238	6.0451	56644	.0444881	28.701	.112350	.520700	1.098400	579.859	707.66	8.902000	2.967333	.8902000	.0016867	.0013727
5	.22	5.5880	48400	.0380133	24.525	.095990	.444800	.938400	495.379	604.57	10.41800	3.472666	1.041800	.0019737	.0016064
6	.203	5.1562	41209	.0323663	20.88	.081750	.378800	.799200	421.785	514.78	12.23200	4.077333	1.223200	.0023170	.0018857
7	.18	4.5720	32400	.0254469	16.416	.064240	.297700	.628200	331.584	404.72	15.56600	5.188666	1.556600	.0029486	.0023997
8	.165	4.1909	27225	.0213825	13.793	.053990	.250200	.528000	278.784	340.19	18.52400	6.174666	1.852400	.0035098	.0028571
9	.148	3.7592	21904	.0172031	11.098	.043430	.201300	.424800	224.294	273.68	23.02200	7.674000	2.302200	.0043619	.0035509
10	.134	3.4033	17956	.0141028	9.098	.035590	.164900	.348100	183.787	224.31	28.09600	9.365333	2.809600	.0053219	.0043321
11	.120	3.0480	14400	.0113097	7.296	.028540	.132200	.279000	147.312	179.84	35.03600	11.67866	3.503600	.0066382	.0054035
12	.109	2.7686	11881	.0093313	6.0186	.023550	.109100	.230200	121.545	148.38	42.46600	14.15533	4.246600	.0080466	.0065500
13	.095	2.413	9025	.0070882	4.573	.017890	.082900	.174900	92.347	112.73	55.89600	18.63200	5.589600	.0105900	.0086207
14	.083	2.1082	6889	.0054102	3.4900	.013660	.063300	.133500	70.488	86.04	73.21200	24.40400	7.321200	.0138700	.0112931
15	.072	1.8288	5184	.0040715	2.626	.010280	.047600	.100500	53.064	64.76	97.28000	32.42666	9.728000	.0184300	.0150000
16	.065	1.6510	4225	.0033183	2.1402	.008380	.038800	.081900	43.243	52.78	119.3600	39.78666	11.93600	.0226100	.0184100
17	.058	1.4732	3364	.0026421	1.7043	.006675	.030900	.065200	34.426	42.02	149.8600	49.95333	14.98600	.0284000	.0231200
18	.049	1.2446	2401	.0018854	1.2161	.004760	.022050	.046500	24.552	29.97	210.0800	70.02666	21.00800	.0398000	.0324000
19	.042	1.0668	1764	.0013854	.894	.003500	.016200	.034200	18.057	22.04	285.7200	95.24000	28.57200	.0541400	.0440700
20	.035	.8890	1225	.0009621	.6207	.002430	.011250	.023800	12.566	15.33	411.5200	137.1733	41.15200	.0779800	.0634800
21	.032	.8128	1024	.0008042	.5188	.002030	.009400	.019900	10.505	12.82	492.8000	164.2666	49.28000	.0933800	.0760000
22	.028	.7112	784	.0006157	.3973	.001553	.007200	.015200	8.044	9.81	643.6000	214.5333	64.36000	.1219000	.0992500
23	.025	.635	625	.0004909	.3167	.001240	.005700	.012100	6.393	7.80	807.2000	269.0666	80.72000	.1529000	.1244000
24	.022	.5588	484	.0003801	.2453	.000960	.004400	.009400	4.963	6.05	1041.600	347.2000	104.1600	.1973000	.1606000
25	.020	.508	400	.0003144	.1642	.000793	.003600	.007700	4.066	4.96	1261.200	420.4000	126.1200	.2389000	.1944000
26	.018	.4572	324	.0002544	.1642	.000643	.002900	.006200	3.274	3.99	1555.200	518.4000	155.5200	.2946000	.2398000
27	.016	.4064	256	.0002010	.1297	.000508	.002300	.004900	2.587	3.15	1969.200	656.4000	196.9200	.3729000	.3035000
28	.014	.3556	196	.0001539	.0993	.000389	.001800	.003800	2.008	2.45	2572.800	857.6000	257.2800	.4872000	.3965000
29	.013	.3302	169	.0001327	.0856	.000335	.001500	.003200	1.690	2.06	2984.400	994.8000	298.4400	.5652000	.4600000
30	.012	.3048	144	.0001130	.0730	.000285	.001300	.002700	1.426	1.74	3506.400	1168.800	350.6400	.6640000	.5404000

B.W.G. No.	LENGTH AND RESISTANCE. Feet per Ohm.	Yards per Ohm.	1000ft. per Ohm.	Miles per Ohm.	Knots per Ohm.	Ohms per Foot.	Ohms per Yard.	Ohms per 1000ft.	Ohms per Mile.	Ohms per Knot.	Resistance & Weight. Ohms per Lb.	Lbs. per Ohm.	B.W.G. No.
0000	1906855	635618	361.0957	57.015	42.005	.0000052441	.0000157322	.0005244	.0276	.0318	.0000082767	12080.5	0000
000	1513000	504333	286.5000	45.238	33.333	.0000066138	.0000198414	.0006614	.0349	.0402	.0000104329	9580.7	000
00	1200600	400200	227.4000	35.902	26.450	.0000083400	.0000250200	.0008340	.0440	.0507	.0000131535	7601.2	00
0	952400	317467	180.4000	28.485	20.988	.0000105100	.0000315300	.0010510	.0555	.0639	.0000165836	6030.1	0
1	755400	251800	143.1000	22.594	16.650	.0000132500	.0000397500	.0013250	.0699	.0806	.0000209100	4782.1	1
2	599000	199667	113.5000	17.918	13.207	.0000167000	.0000501000	.0016700	.0882	.1016	.0000263600	3793.2	2
3	475200	158400	90.0000	14.210	10.476	.0000210500	.0000631500	.0021050	.1111	.1280	.0000332500	3008.3	3
4	376800	125600	71.3600	11.266	8.307	.0000265400	.0000796200	.0026540	.1401	.1614	.0000419200	2385.4	4
5	298800	99600	56.6000	8.936	6.588	.0000334800	.0001004400	.0033480	.1767	.2036	.0000528800	1891.3	5
6	237000	79000	44.9000	7.089	5.226	.0000422000	.0001266000	.0042200	.2227	.2567	.0000667000	1499.3	6
7	188000	62667	35.6000	5.621	4.144	.0000532000	.0001596000	.0053200	.2807	.3235	.0000841000	1189.3	7
8	149000	49700	28.2000	4.456	3.285	.0000671000	.0002013000	.0067100	.3540	.4079	.0001060000	943.4	8
9	118200	39400	22.3600	3.532	2.604	.0000846000	.0002538000	.0084600	.4463	.5144	.0001337000	747.9	9
10	93800	31267	17.7500	2.802	2.066	.0001066000	.0003198000	.0106600	.5624	.6481	.0001685000	593.5	10
11	74400	24800	14.0800	2.223	1.639	.0001344000	.0004032000	.0134400	.7090	.8170	.0002124000	470.8	11
12	59000	19667	11.1700	1.764	1.300	.0001695000	.0005085000	.0169500	.8943	1.030	.0002679000	373.4	12
13	46800	15600	8.8600	1.399	1.031	.0002137000	.0006411000	.0213700	1.127	1.299	.0003377000	296.2	13
14	37100	12367	7.0300	1.110	.8178	.0002695000	.0008085000	.0269500	1.421	1.638	.0004258000	234.9	14
15	29400	9800	5.5700	.8800	.6482	.0003400000	.0010200000	.0340000	1.793	2.067	.0005372000	186.2	15
16	23300	7767	4.4100	.6969	.5134	.0004291000	.0012873000	.0429100	2.263	2.608	.0006780000	147.5	16
17	18500	6167	3.5000	.5530	.4074	.0005411000	.0016233000	.0541100	2.854	3.290	.0008553000	117.0	17
18	14700	4900	2.7800	.4393	.3236	.0006825000	.0020475000	.0682500	3.600	4.149	.0010786000	92.8	18
19	11600	3867	2.1900	.3460	.2549	.0008613000	.0025839000	.0861300	4.542	5.235	.0013610000	73.5	19
20	9200	3067	1.7400	.2747	.2024	.0010860000	.0032580000	.1086000	5.728	6.601	.0017160000	58.3	20
21	7300	2433	1.3800	.2180	.1606	.0013700000	.0041100000	.1370000	7.225	8.327	.0021650000	46.2	21
22	5800	1933	1.0900	.1730	.1274	.0017280000	.0051840000	.1728000	9.113	10.500	.0027300000	36.6	22
23	4600	1533	.8700	.1373	.1012	.0021780000	.0065340000	.2178000	11.490	13.240	.0034420000	29.0	23
24	3650	1217	.6900	.1089	.0803	.0027470000	.0082410000	.2747000	14.490	16.700	.0043410000	23.0	24
25	2900	967	.5500	.0864	.0637	.0034630000	.0103890000	.3463000	18.270	21.050	.0054730000	18.3	25
26	2300	767	.4350	.0686	.0506	.0043670000	.0131010000	.4367000	23.040	26.540	.0069020000	14.5	26
27	1820	607	.3450	.0544	.0401	.0055060000	.0165180000	.5506000	29.060	33.460	.0087020000	11.5	27
28	1440	480	.2730	.0431	.0318	.0069440000	.0208320000	.6944000	36.640	42.200	.0109700000	9.1	28
29	1140	380	.2160	.0341	.0251	.0087570000	.0262710000	.8757000	46.220	53.210	.0138400000	7.2	29
30	904	301	.1710	.0270	.0199	.0110400000	.0331200000	1.104000	58.260	67.080	.0174500000	5.7	30

PURE COPPER weighs 555lb. per Cubic Foot. The Resistance of one mil-foot at 60° Fahr. is, according to Dr. Matthiessen, 10·2311 Ohms. Upon these data the above Table has been calculated. The *Resistance* of Copper varies with the Temperature at about 0·38 per cent. per degree Centigrade, or 0·21 per cent. per degree Fahr.

* 1 Mil. = ·001 inch.
Diameter = d.
Sectional Area in Circular Mils. = d².
Area in Square Inches = d² × ·7854.

To convert	Inches to Millimètres	multiply by 25·3994
	Feet to Mètres	,, ·3048
	Yards to Mètres	,, ·9144
	Miles to Kilomètres	,, 1·6093
	Pounds to Kilogrammes	,, ·45359

1 Statute Mile = 1760 yards or 5280 feet.
1 *Knot* or Nautical Mile = 2029 yards or 6087 feet.
1 Admiralty Knot = 20262 yards or 6080 feet.
1 Statute Mile = ·86742 Knots.
1 *Knot* or Nautical Mile = 1·1518 Statute Miles.
1 Admiralty Knot = 1·1516 Statute Miles.

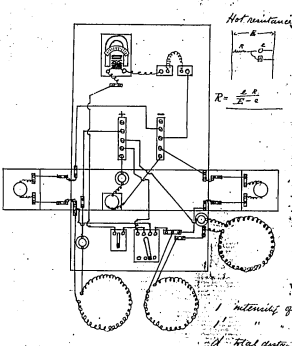
STRANDED WIRE.—A *Stranded Conductor* of a given length is of *greater weight* and has a *less resistance* than an equal length of the same number of wires *unstranded*.

MANCHESTER COPPER

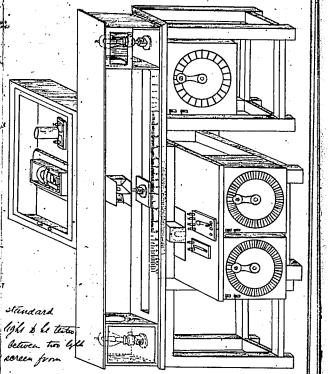
ENTERED AT STATIONERS' [illegible]

Issued by WALTER [illegible]

Lamp Testing Apparatus.



Connections.



I Intensity of Standard
I' " " "
d Total distance between
x distances of standard

Light & lamp to be tested from

Scale for Photometer.

$I : x^2 :: I' : (d-x)^2 =$ $\quad \therefore x = \frac{d\sqrt{I}}{\sqrt{I}+\sqrt{I'}}$.

Position of Screen for any candle power

Chaudières Belleville

Types	Diam.	Long.	Surface	Chauff. nécessaire	Chevaux	Production par heure sèche 7 kil. eau
L 3	6M00	1m810	1m245	3mm	24	360 k.
L 4	1650	"	1m685	"	33	500 .
L 5	9000	"	1m885	"	42	650 .
L 6	10500	"	2m105	"	51	765 .
B 4	10450	2m860	2m085	3mm660	55	825 .
B 5	12600	"	2m335	"	70	1050 .
B 6	14H00	"	2m585	"	85	1275 .
B 7	16200	"	2m835	"	100	1500 .
C 5	18500	2m860	2m865	4m260	115	1725 .
C 6	21000	"	3m145	"	140	2100 .

Chaudières à 1 foyer de Belleville, à Gaz

Nos	Chaudières			Corps de la chaud.		Foyer		Surface totale		Poids		Eau	
				Diam.	Long.	Diam.	Long.	Chauff.	Grille	Chaudière	Appareil alimentaire	Chaud.	Appar. alim.
16	H	7	1m00	1m20	2m00	0m70	0m70	7m00	0m50	1m05	0m30	1m15	0m05
18	H	8	"	"	"	"	"	8m00	"	1m200	0m350	1m35	0m05
20	H	9	"	"	"	"	"	9m00	"	1m350	0m400	1m50	0m05
22	H	10	"	"	"	"	"	10m00	"	1m500	0m450	1m65	0m05
24	B	9	1m20	"	"	0m80	0m80	9m00	0m64	1m350	0m400	1m50	0m05
26	B	10	"	"	"	"	"	10m00	"	1m500	0m450	1m65	0m05
28	B	11	"	"	"	"	"	11m00	"	1m650	0m500	1m80	0m05
30	B	12	"	"	"	"	"	12m00	"	1m800	0m550	1m95	0m05
32	B	13	"	"	"	"	"	13m00	"	1m950	0m600	2m10	0m05
34	B	14	"	"	"	"	"	14m00	"	2m100	0m650	2m25	0m05
36	B	15	"	"	"	"	"	15m00	"	2m250	0m700	2m40	0m05
38	B	16	"	"	"	"	"	16m00	"	2m400	0m750	2m55	0m05
40	B	17	"	"	"	"	"	17m00	"	2m550	0m800	2m70	0m05
42	B	18	"	"	"	"	"	18m00	"	2m700	0m850	2m85	0m05
44	B	19	"	"	"	"	"	19m00	"	2m850	0m900	3m00	0m05
46	B	20	"	"	"	"	"	20m00	"	3m000	0m950	3m15	0m05
48	B	21	"	"	"	"	"	21m00	"	3m150	1m000	3m30	0m05
50	B	22	"	"	"	"	"	22m00	"	3m300	1m050	3m45	0m05
52	B	23	"	"	"	"	"	23m00	"	3m450	1m100	3m60	0m05
54	B	24	"	"	"	"	"	24m00	"	3m600	1m150	3m75	0m05
56	B	25	"	"	"	"	"	25m00	"	3m750	1m200	3m90	0m05
58	B	26	"	"	"	"	"	26m00	"	3m900	1m250	4m05	0m05
60	B	27	"	"	"	"	"	27m00	"	4m050	1m300	4m20	0m05
62	B	28	"	"	"	"	"	28m00	"	4m200	1m350	4m35	0m05
64	B	29	"	"	"	"	"	29m00	"	4m350	1m400	4m50	0m05
66	B	30	"	"	"	"	"	30m00	"	4m500	1m450	4m65	0m05
68	B	31	"	"	"	"	"	31m00	"	4m650	1m500	4m80	0m05
70	B	32	"	"	"	"	"	32m00	"	4m800	1m550	4m95	0m05
72	B	33	"	"	"	"	"	33m00	"	4m950	1m600	5m10	0m05
74	B	34	"	"	"	"	"	34m00	"	5m100	1m650	5m25	0m05
76	B	35	"	"	"	"	"	35m00	"	5m250	1m700	5m40	0m05
78	B	36	"	"	"	"	"	36m00	"	5m400	1m750	5m55	0m05
80	B	37	"	"	"	"	"	37m00	"	5m550	1m800	5m70	0m05
82	B	38	"	"	"	"	"	38m00	"	5m700	1m850	5m85	0m05
84	B	39	"	"	"	"	"	39m00	"	5m850	1m900	6m00	0m05
86	B	40	"	"	"	"	"	40m00	"	6m000	1m950	6m15	0m05
88	B	41	"	"	"	"	"	41m00	"	6m150	2m000	6m30	0m05
90	B	42	"	"	"	"	"	42m00	"	6m300	2m050	6m45	0m05
92	B	43	"	"	"	"	"	43m00	"	6m450	2m100	6m60	0m05
94	B	44	"	"	"	"	"	44m00	"	6m600	2m150	6m75	0m05
96	B	45	"	"	"	"	"	45m00	"	6m750	2m200	6m90	0m05
98	B	46	"	"	"	"	"	46m00	"	6m900	2m250	7m05	0m05
100	B	47	"	"	"	"	"	47m00	"	7m050	2m300	7m20	0m05
102	B	48	"	"	"	"	"	48m00	"	7m200	2m350	7m35	0m05
104	B	49	"	"	"	"	"	49m00	"	7m350	2m400	7m50	0m05
106	B	50	"	"	"	"	"	50m00	"	7m500	2m450	7m65	0m05

Chaudières à 2 foyers de Babcock & Wilcox.

Numéros	Dimensions tubes		Nombre tubes	Surface de chauffe tubes	Surface de chauffe foyers	Surface de chauffe totale	Grilles	Longueur foyers	Largeur foyers	Surface totale	Poids vapeur atmosphères	Poids vapeur atmosphères	Poids eau foyers	Poids eau foyers
	diam.	long.												
90	8	1,2256	2	102	7,38	109,38	1,10	1,10	1,10	1,10	15,000	2,00	1,88	2,00
102	"	8	"	"	"	0,87	10,515	"	"	"	13,000	1,00	"	10,000
114	10	8	"	"	"	"	138,76	"	2,75	"	16,000	0,00	1,71	11,750
126	12	7	0,254	"	"	0,18	18,184	0,18	0,03	"	21,000	3,00	2,13	13,250
138	"	8	"	"	"	"	19,304	"	"	"	23,000	3,00	2,54	14,000
141	"	9	"	"	"	"	20,412	"	"	0,55	19,000	3,00	2,49	14,983
28	"	9	0,32	"	3,11	7,50	28,18	23,587	6,92	"	30,000	3,00	3,29	17,833
240	14	"	"	"	"	"	25,259	"	"	3,77	41,000	4,00	3,28	19,033
252	16	"	"	"	"	"	28,123	"	"	0,55	32,000	4,00	3,71	21,083
252	20	7	0,254	9	102	7,38	9,10	3,14,73	0,18	0,48	0,10	41,000	4,00	4,28	24,700
116	"	9	0,32	"	3,11	7,50	10,61	4,26,58	0,41	"	0,55	38,000	0,00	3,49	21,833
116	28	"	"	"	"	"	"	41,978	"	4,06	"	48,000	4,00	0,31	25,600

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Cheminées Toisoul et Fradet

Observations	diamètre intérieur	hauteur au dessus du toit	Cubes
20	0m 50	20	30.000
20	"	25	40.000
30	0,55	25	50.000
30	"	30	70.000
40	0.60	"	80.000
50	0,70	"	100.000
60	0,75	"	110.000
70	0,80	"	120.000
80	0,90	"	130.000
90	0,95	"	140.000
100	1	"	150.000
100	1	40	220.000
200	1,55	"	290.000
300	1,65	"	300.000
400	1,80	"	325.000
300	2	"	350.000
600	2.20	"	365000

60 francs par mètre cube

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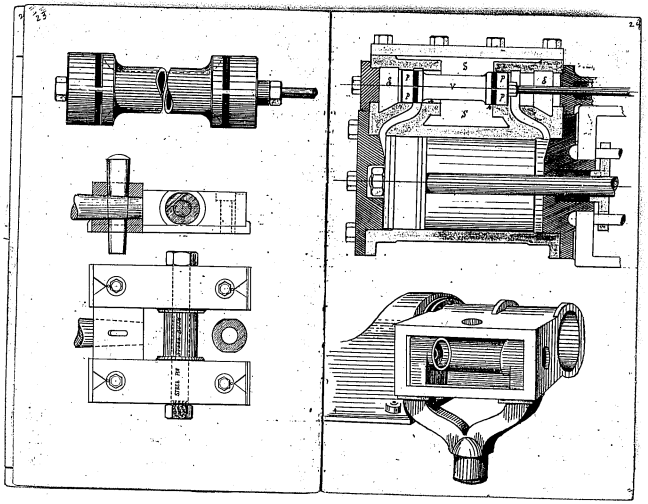
Cheminées en tole Babcock et Wilcox

Observations	diamètres	hauteurs
45	0m 61	20
51	0,66	"
62	0.66	"
75	0.71	"
82	0.76	"
92	0.76	"
104	0.81	25
120	0.85	"
136	0.85	"
146	0.92	"
208	0.97	"
240	1.06	30
292	1.12	"
416	1.22	40
480	1.37	"

55 francs les 100 Kilos



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Moteurs Weyher et Richemond.

Nos	Force en chevaux Normaux	Force en chevaux Anglais	Poids net Ac. Jour	Poids net Fonte	Poids brut Ac. Jour	Poids brut Fonte
1	4	5	1900	2400	4800	11800
2	5	7	2400	2900	5100	5800
3	7	10	3000	3600	7000	7800
4	10	14	4700	5300	8800	8800
4½	12	16	4100	4800	9800	10400
5	15	22	4300	6800	11000	11700
6	20	34	6200	7000	15600	14300
7	25	32	7300	8000	18000	17400
8	30	50	10300	"	23000	"

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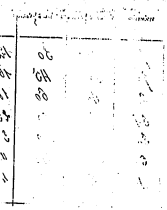
Machines Américaines

Nos	TYPES	A	B	C	D	E	Poids net	Poids brut
2 à 4 chevaux	Horizontal Vertical Pour	325 325 325	3m 4 3 4	1m 09 1 41	1m 34 1 84	1m 34 1 84	1m 00	1m 00
3 chevaux	Horizontal Vertical Pour	325 325 325	3 4 3 4	1 09 1 41	1 34 1 84	1 34 1 84	1 00	1 00
4 chevaux	Horizontal Vertical Pour	325 325 325	3 4 3 4	1 09 1 41	1 34 1 84	1 34 1 84	1 00	1 00
5 chevaux	Horizontal Vertical Pour	325 325 325	3 4 3 4	1 09 1 41	1 34 1 84	1 34 1 84	1 00	1 00
6 chevaux	Horizontal Vertical Pour	325 325 325	3 4 3 4	1 09 1 41	1 34 1 84	1 34 1 84	1 00	1 00
7 chevaux	Horizontal Vertical Pour	325 325 325	3 4 3 4	1 09 1 41	1 34 1 84	1 34 1 84	1 00	1 00
8 chevaux	Horizontal Vertical Pour	325 325 325	3 4 3 4	1 09 1 41	1 34 1 84	1 34 1 84	1 00	1 00

Machines Cotton.

Numéro des machines	Force en chevaux nominaux	Chargement Métallique dans le Fuseau 2e numéro	Chargement Métallique dans le Fuseau 3e numéro	Prix à vide sans embarquement	Prix tout embarqué
0	18	20	30	12000	11000
1	30	30	45	16000	14500
2	60	40	60	17000	16500
3	54	60	90	23000	21000
4	80	80	120	30000	27000
5	80	120	170	40000	36000
5 bis	48	150	220	45000	40000

Remise de 5% sur tout ce qui précède



Résumé des devis d'installations Edison

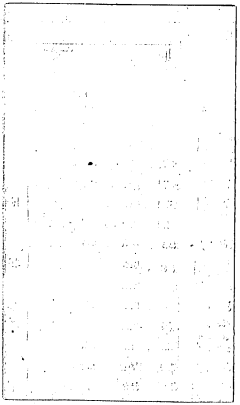
Notes on Dynamos.

Class	Section View of Devis	No. of Lamps A	No. of Lamps B	Dia. of Iron Core	Electric Length of Armature	Outside Diameter	Sq. Inches of Effect. Surface	No. of Divisions	Average Res. of Armature in Ohms	Average Res. for Heat	Average Feet Speed per Min.	Size of Wire Bare	Size of Wire Covered	No. of Loops	Wires per Loop	Cir. Mils per Loop
Volts 110 F 55		15	—	4 3/4"	8"	5"	125 sq"	24	.36	2200	2800	.042	.057	8	2	3528
		—	30	—	—	—	—	—	.09					4	4	7056
110 Z 55		60	—	9 11/16	11"	10"	345 sq"	24	.14	1200	3140	.042	.057	2	6	10,584
		—	120	—	—	—	—	—	.035					1	12	21,168
110 L 55		150	—	9 11/16	22"	10 1/2"	726 sq"	54	.069	850	2340	.065	.085"	2	6	25,350
		—	300	—	—	—	—	—	.017					1	12	50,700
110 K 55		250	—	9 11/16	30"	10 1/2"	990 sq"	64	.032	900	2560	.065"	.085"	1	10	42,250
		—	500	—	—	—	—	32	.008			—	—	1	20	84,500
110 H		350	—	9 11/16	30 1/2"	10 1/2"	1006 sq"	54	.021	1200	3300	.065"	.095"	1	12	50,700

May 1st 2d 1883.

The Edison Elect. Light Co. N.Y.

1000 B 3H400 4 369 d10 4 1-22 1.60 4 2.37 4



Résumé des devis d'installations Edison

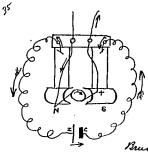
Installations	Matériel électrique — Usine: Nombre de lampes	Usine: Force en chevaux	Embranchements: Nombre de lampes	Embranchements: Force en chevaux	Emplacement: Surface en m²	Emplacement: Prix du m²	Emplacement: Total	Emplacement: Usine: Nombre de chaudières	Emplacement: Usine: Surface	Emplacement: Usine: Prix du m²	Emplacement: Usine: Total	Emplacement: Machines: Nombre de machines	Emplacement: Machines: Surface	Emplacement: Machines: Prix du m²	Emplacement: Machines: Total	Matériel moteur
1 Usine E	1050		1050		275,50	"										
1 dyn. Z	2060		2060		1811	"										
	60		5760		5110	"										
	30		3550		2750	"										
	30															
	120		6670		6570	"										
1 dyn. L	150		9525	2550	9300	13500										
	15		4553	2100	11100	1650										16h50
	100															
	500		11350	3500	12500	18500										
1 dyn. K	260		15825		14450											
	100		15850		15850											29500
	200															
	500		17200		15450											
2 dyn. Ll	300		19050		17650											
	150		20075		22200											33700
	300															
	600		23100		24600											
2 dyn. K	300		27650		28900											
	200		31390		33700											42500
	600															
	1000		34850		36900											

Electromagnet

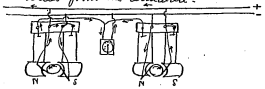
Core Diam.	Core Long.	Poles Long.	Poles Diam.	Fils Diam.	Fils Tours	Fils Couches	Fils Enfance	Joues Long.	Joues Haut.	Joues Poids	Joues D.
25	145	300	38.4	8.9	5/10	220	(22)	(20)	200	140	28000	60
50	160	350	85.	8.9	5/10	300	18	90	220	200	44000	165
200	230	530	170	47	14/10	275	14	45	280	280	78400	225
500	230	520	170	47	16/10	270	15	15	880	280	246400	705

Armature

Longueur et Diam.	Noyau Fils	Fils D.	Fils Nb de fils	Nb de fils à recouvrir	Diamètre des Cercles	Arrêt Epaiss.	Tours au Volt	Nbre de Tours
216 x 115	128	3/10	2	9 fois	32	0.4	4	1600
234 x 132	180	11/10	4	9 "	54	0.18	8	1500
304 x 268	262	14/10	8	1 "	74	0.044	33	1200
304 x 264	270	16/10	21	1 "	44	0.016	75	750



Charge dynamo in this manner and then connect brush pointed down to right hand stud for Brush pointed down will be + and the one by which the current issues from the armature.



Two machines running opposite

$\frac{E}{R} = C$. $R \times C = E$ $\frac{E}{C} = R$.

Heat $= C^2 \times R$, or. $\frac{E^2}{R}$

Energy. Kilgms $C^2 \times R \div 9.81$, or $\frac{E^2}{R} \div 9.81$

or $E \times C \div 9.81$

Calculation of Wires.

R of Wire $=$ $\frac{\text{Length} \times \text{specific R.}}{\text{Section}}$

2 Wire System

Section $= \frac{2 \text{ distances} \times .017}{\text{lbs.}} \times \frac{1}{\%} = 10\%$ loss.

$\frac{\%}{100} \times \frac{E.D}{R.} = C$ amp.

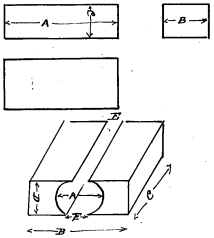
Length of wire $= \frac{R \times S}{2 \text{ for } R}$.

Accepted with Germans for 1883.

Lamps.		HP.	Watts/hp.
Siemens & Halske	No 2	12	52
" "	4	16	73
" "	6	25	117
Edison A		16	73
" B		8	40
Siemens Bre & C°		20	96
Lucas		15	66

Machines
Sixième division.
Sixth subdivision, from the 5th to the 6th class.
Each 5 min. machine 2 pts.

Matériel	Installations											
	17	25	50	60	100	120	150	200	250	300
machines.	lampes Jablochkoff		lampes Jablochkoff		lampes Jablochkoff		lampes Jablochkoff		lampes Jablochkoff	
	à 16 bougies	à 16 bougies	à 16 bougies	à 16 bougies	à 16 bougies	à 16 bougies	à 16 bougies	à 16 bougies	à 16 bougies	à 16 bougies
	4 chevaux	8 chevaux	16 chevaux	20 ch.	32 ch.	40 chevaux	50 ch.	64 ch.	80 ch.	100 chevaux
Machines	4 000	7 000	12 500				17 000			19 000
Fondations	70	90	100				120			200
Engrenages	300	350	400				450			750
Transmissions & fonds	500	610	800				1 200			2 000
Conducteurs	150	250	350				500			800
Montage	100	150	150				200			400
Totaux :	5 120 F.	8 520 F.	13 500 F.				19 470 F.			23 150
Prix par lampe.	320 F.	213 F.	169,50	142,50	119,50	109,50	97,50	94,50	93,60	77,16



Dynamos.

Type	17	60	120	190	300	350	500	25	200	50	
					Keeper						
A	395	614	695	610	645	610	700	460	590	520	
B	148	200	281	202	230	202	296	200	280	220	
C	122	160	168	170	205	168	148	85	146	92	
					Magnet head.						
A	132	268	268	270	270	275	546	180	269	180	
B	428	630	690	630	640	630	1346	460	690	520	
C	190	242	258	493	565	750		200	280	220	
D	130	276	276	276	276	276	556	140	280	190	
E	63	75	98	110	110	130	140	60	120	80	
F	63	75	98	80	90	90	120	50	75	58	

Arma Fine -

Type.	Ex 2000 ℔	60	120	150	300	250	580
Diam. ext. of wire	126	260	260	262	262	265	265
" of core.	113	246	246	246	246	246	246
" of Wood.	50	125	125	125	125	125	125
" of Shaft.	26½	48	48	76	76	89	89
Pulley. { Diametri	130	254	254	350	350	350	
Pulley. { Largeur	80	162	162	220	231	230	
Nombr. N°es	2	6	12	6	12	10	21
" tours round	8	2	1	2	1	1	1
" of Sections	24	44	44	54	54	64	44
Resistance	·135	·142	·042	·07	·0178	·036	·01
Weight of wire Kg.		12	15	223	29	326	43
Diametre N°e	10/0	10/0	9/0	16/	16/	16/	
Longeur de rayeure	194	277	577				
Revolutions	2200	800	1300	850			

Type.	Ex 2000 ℔	25	200	50	1000 ℔	500
Diam. ext. of wire	126	125	260	180		270
" of core.	113	113	246	182		246
" of Wood.	50					
" of Shaft.	26½					
Pulley. { Diametri	130					
Pulley. { Largeur	80					
Nombr. N°es	2	2	8	4	2	21
" tours round	8	9	1	4	12	1
" of Sections	24	32	14	84	24	44
Resistance	·135	·422	·029	·486		
Weight of wire Kg.		618	202	1018		
Diametre N°e	10/0	13/0	16/0	3/0	19/	16/12
Longeur de rayeure	194	216	304	216		904
Revolutions	2200		1200			

Magnet Cores

	11	60	120	150	300	250
Diameter	115	160	200	160	205	160
Longeur.	431	1070	820	1070	720	1070
Thickness wood each end	10	10	10	11	12	10
Diameter cast of wire		192		192	250	192
Cores to Machine	2	2	2	4	4	6
Weight of each core						
Diam of wire dencum	9/	14/	16/	14/	16/	16/
" " " covered		19/	21/	19/	21/	19/
Number of layers	12½	61	11½	61½	14	61½
" " turns per layer	122	345	290	585	290	585
Coil Resistance	90	42	45	22½	22½	14
Pond de Vaporeur	89	345	47	345	47	345

5700	25	230	50	17	270
115	145	230	160		230
345	300	520	350		520
12	13				
216	188	220 ~~300~~	192 ~~250~~		
6	2	2	2		6
	9/16				
16/	9/	16/	9/		16/16
21/		21/			
12	14	12	11		12
234	220	234			
13	7/8	45	18		18
47	89	47	89		47

Winding of Armatures.

60 Lamps A

6 Wires of 12/0 twice round
Resist. .125
12 Nil Wire

120 Lamps A

12 Wire 7/0 once round
R. .042

150 Lamps A

6 wires of 12/0 twice round
R= .07

300 Lamps A

12 Wire 16/0 once round
R. = 0.0175

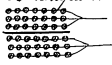
17 Lamps A 2200 turns

17 Lamps A 1700 turns

250 Lamps A

10 Wires 16/0 once round
R. .035

500 Lamps A



21 Wire 16/0 once round
R. .01

25 Lamps A

2 Wires 12/0 9 times round
R= .42

50 Lamps A

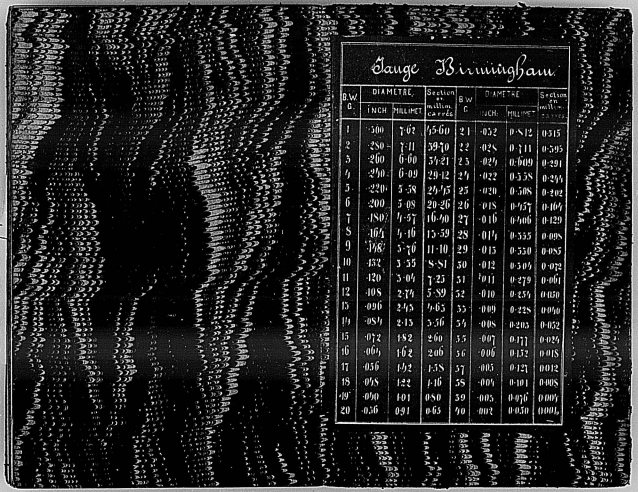
4 Wires 12/0 4 times round
R= .048

Armatures (continued)

200 Lamps A

8 Wires 1/10 mean round

K = .029



Jauge Birmingham

B.W.G.	DIAMETRE		Section en millim. carrés	B.W.G.	DIAMETRE		Section en millim. carrés
	INCH.	MILLIMET.			INCH.	MILLIMET.	
1	·500	7·62	45·60	21	·032	0·812	0·315
2	·480	7·11	39·70	22	·028	0·711	0·595
3	·460	6·60	34·21	23	·024	0·609	0·291
4	·440	6·09	29·12	24	·022	0·558	0·254
5	·220	5·58	24·45	25	·020	0·508	0·202
6	·200	5·08	20·26	26	·018	0·457	0·164
7	·180	4·57	16·40	27	·016	0·406	0·129
8	1/6	4·16	13·59	28	·014	0·355	0·098
9	5/48	3·70	11·10	29	·013	0·330	0·085
10	·132	3·35	8·81	30	·012	0·305	0·072
11	·120	3·05	7·23	31	1/90	0·279	0·061
12	·108	2·74	5·89	32	·010	0·254	0·050
13	·096	2·45	4·65	33	·009	0·228	0·038
14	·080	2·15	3·50	34	·008	0·203	0·032
15	·072	1·82	2·60	35	·007	0·177	0·025
16	·065	1·62	2·06	36	·006	0·152	0·018
17	·056	1·42	1·58	37	·005	0·127	0·012
18	1/18	1·22	1·16	38	·004	0·101	0·008
19	·040	1·01	0·80	39	·003	0·076	0·005
20	·036	0·91	0·65	40	·002	0·050	0·001